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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,168	12/18/2001	Ralf Dorscheid	DE000234	5133

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EXAMINER

REIS, TRAVIS M

ART UNIT PAPER NUMBER

2859

DATE MAILED: 05/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/023,168

Applicant(s)

DORSCHIED ET AL.

Examiner

Travis M Reis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/18/01.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 9-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-8 & 12, drawn to a detector for the detection of electromagnetic radiation, classified in class 250, subclass 370.11.
 - II. Claims 9-11, drawn to a method of forming a detector, classified in class 438, subclass 64.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case a detector for the detection of electromagnetic radiation may be formed by other methods, such as having the adhesive connect the components via a press leveling process, instead of with capillary action as disclosed in Invention II.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. Bodopia on 2/24/03 & 5/8/03, a provisional election was made without traverse to prosecute the invention of a detector, claims 1-8 & 12. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-11 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

6. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

In this case, appropriate headings should be added as needed. Appropriate correction is required.

Claim Objections

7. Claims 3 & 6 are objected to because of the following informalities:

Claim 3 recites the limitation "said adhesive" in line 2. There is insufficient antecedent basis for this limitation in the claim since numerals, (i.e. "A") are not part of the limitations. Perhaps applicant should use "first" and "second" adhesives.

Claim 6 recites the limitation "the bumps" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. Claims 1-4, 6-8 & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wieczorek et al. (U.S. Patent 6292528) in view of Nakajyo et al. (U.S. Patent 6420213).

With reference to claims 1, 2, 4, 6-8, & 12, Wieczorek et al. disclose a detector for the detection of electromagnetic radiation, i.e. X-rays (col. 3 line 10), which detector includes a scintillator (11), a CMOS chip (9), and a base element (15), wherein a respective intermediate layer (13) that is defined in respect of its gap width is arranged each time between the scintillator and the CMOS chip and between the CMOS chip and the basic element, wherein said intermediate layer contains an adhesive (13), wherein said adhesive has some quantities applied to the surface of the scintillator that faces the CMOS chip as well as to bumps that are present on the CMOS chip while said adhesive also has some quantities (16) applied directly to the rear surfaces of the CMOS chip and the basic element .

Wieczorek et al. do not disclose the basic element is a ceramic element based on aluminum oxide. However, the particular type of material used to make the basic element, absent any criticality, is only considered to be the use of a " preferred " or " optimum " material out of a plurality of well known materials that a person having ordinary skill in the art at the time the invention was made would have find obvious to provide using routine experimentation based, among other things, on the intended use of Applicant's apparatus, i.e., suitability for the intended use of Applicant's apparatus, and since the courts have stated that a selection of a material on the basis of suitability for intended use of an apparatus would be entirely obvious. See In re Leshin, 125 USPQ 416 (CCPA 1960).

Wieczorek et al. do not disclose a second epoxy resin adhesive and spacers.

Nakajyo et al. discloses a method for fixing a semiconductor device (1) having stud bumps/spacers (2) to a ceramic substrate (3) by an electrically non-conductive epoxy resin adhesive (7) (col. 6 lines 66-67 through col. 7 line 1) and a electrically conductive adhesive (5) that is well known in the prior art (col. 1 lines 42-65), wherein the gap width is determined by the quantity of adhesive and plurality of spacers (Figures 2 & 4). Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention was made to add the second adhesive and stud bumps/spacers disclosed by Nakajyo et al. to the adhesive layers disclosed by Wieczorek in order to create a strong physical and electrical bond between the scintillator, CMOS chip, and basic element.

With reference to claim 3, Wieczorek et al. & Nakajyo et al. do not disclose the adhesive is a fast curing epoxy resin, cyanoacrylate or acrylate adhesive. However, the particular type of material used to make the adhesive, absent any criticality, is only considered to be the use of a " preferred " or " optimum " material out of a plurality of well known materials that a person having ordinary skill in the art at the time the invention was

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made would have find obvious to provide using routine experimentation based, among other things, on the intended use of Applicant's apparatus, i.e., suitability for the intended use of Applicant's apparatus, and since the courts have stated that a selection of a material on the basis of suitability for intended use of an apparatus would be entirely obvious. See In re Leshin, 125 USPQ 416 (CCPA 1960).

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wieczorek et al. & Nakajyo et al. as applied to claims 1-4, 6-8, & 12 above, and further in view of Doyle et al. (U.S. Patent 6063688).

Wieczorek et al. & Nakajyo et al. disclose all of the instant claimed invention as stated above in the rejection of claims 1-4, 6-8, & 12 including the spacers can be made of Au, Al, and solder (Nakajyo et al. col. 7 lines 62-64).

Wieczorek et al. & Nakajyo et al. do not disclose the spacer is a wire.

Doyle et al. discloses the fabrication of deer submicron structures and quantum wire transistors using hard-mark transistor width definition, wherein quantum wires are used as spacers for the formation of gaps/trenches in the substrate surface (col. 7 lines 50 & 55-57). Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention was made to replace the stud bumps disclosed by Wieczorek et al. & Nakajyo et al. with wire, as taught by Doyle et al. since the spacers claimed by Applicant and the spacers used by Wieczorek et al. & Nakajyo et al. are well known alternate types of spacers which will perform the same function, if one is replaced with the other, of creating gaps between the dielectric elements.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yoshida et al. discloses a radiation detecting device and the

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manufacture thereof (U.S. Patent 5506409). Nakamura et al. discloses a radiation detector element (U.S. Patent 5831269). Tonami et al. discloses an X-Ray CT solid-state detector (U.S. Patent 5965893). Sklebitz et al. discloses a transducer sensitive to radiation (U.S. Patent 6080979). Ono et al. discloses a semiconductor unit and method for manufacturing the same (U.S. Patent 6103551). Boedinger et al. discloses a method of manufacturing large crystal bodies (U.S. Patent 6149748). Warren discloses an X-Ray detector apparatus with reduced thermal expansivity (U.S. Patent 6362481). Takabayashi et al. discloses a radiation image sensor (U.S. Patent 6469305). Wiczorek et al. discloses a detector for the detection for electromagnetic radiation (U.S. Patent 6452186). Yoshida et al. discloses a radiation detector (JP 406331749A).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Travis M Reis whose telephone number is (703) 305-4771. The examiner can normally be reached on 8--5 M--F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (703) 308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8160 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Travis M Reis
Examiner
Art Unit 2859



Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800

tmr
May 8, 2003